

Remarks/Arguments

The Examiner is thanked for his careful review of this Application. Applicants submit this Amendment in response to the Final Office Action, dated January 14, 2004. Claims 25, 26, 42-59 are pending after entry of the present Amendment. Claims 1-24, and 27-41 have been cancelled. Amendments were made to claims 51 and 56 to present the rejected claims in better form for consideration on appeal. No new matter has been added.

Applicants hereby acknowledge allowability of claims 25, 26, 42, 43, 58, and 59.

Claim Rejection under 35 U.S.C. § 102:

The Office has rejected claims 44-57 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,312,319 to Donohue et al. (Donohue). The Office has further rejected claims 51-54, and 56 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,944,585 to Nagahara et al. (Nagahara), and claims 51, 52, 54, and 56 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,062,955 to Liu. As will be explained below, the cited prior art fails to disclose each and every element of the claimed invention, as defined in independent claims 44, 48, 51, and 56.

Contrary to the Office's interpretation, Donahue does not disclose a pressure application plate having a flat width that is applied against the application surface of a dressing media. The alleged flat bar referred to by the Office is the conditioning head of a conditioning system disclosed in Donahue. The referred to conditioning head has surface geometry on its surface and is directly applied to the conditioning pad so as to condition the polishing pad. Thus, the conditioning assembly that uses the alleged flat bar does not include a dressing media and does not use a dressing media. In the claimed invention, however, the plate is applied to the application surface of the conditioning media and, it is the conditioning media that is applied onto the polishing pad so as to condition the pad.

Donahue further fails to disclose moving the polishing pad continually in one direction while performing a CMP operation. In Donahue, a tensioned portion of the polishing pad is used to process the wafer. Thereafter, that specific portion of the polishing pad is indexed so as to be conditioned by the conditioning element. Once conditioning of that specific portion of the polishing pad has concluded, the direction of the polishing pad is reversed allowing that specific portion of the polishing pad to be used to process other wafers. Thus, in contrast to the claimed invention, the polishing pad in Donahue does not continually move in one direction during the CMP operation. Rather, the polishing pad is stationary while the CMP operation is being performed. The same is true for the alleged continuous belt referred to by the Office.

Still further, Donahue teaches applying the conditioning assembly including the web media onto a flexing region of the polishing pad. This is in contrast to the claimed invention wherein the conditioning media is applied to a non-flexing region.

Yet further, Donahue fails to teach that the conditioning region is defined prior to the wafer application region, as the polishing pad is continuously moved in one direction during the CMP operation. Rather, in Donahue, irrespective of the type of conditioning assembly used, not only is the conditioning performed after the wafer preparation region but also the direction of the polishing pad has to be changed so that the conditioned portion of the pad can be used for polishing the next wafer.

In the same manner, Nagahara and Liu fail to disclose each and every element of the claimed invention as defined in independent claims 51 and 56. Among other features, Nagahara fails to disclose moving the pad continuously while performing a CMP operation as well as applying the web dressing media onto a non-flexing region of the pad while performing the CMP operation. Furthermore, the conveying assembly in Nagahara is used to polish rotary or orbital type polishing pads only, and not any other type of a pad. Furthermore, as can be seen in Figures 4A, 4B, 4C, and 4D, the conveying assembly in Nagahara is positioned such that there is no room on the polishing pad for a wafer engaged by a head to be polished. Additionally, Nagahara fails to disclose that the polishing pad has a conditioning region and a polishing region and that the conditioning region is prior to the wafer application region.

Likewise, Liu discloses a diamond sprinkled belt to condition the pad surface. As such, among other features, Liu fails to disclose a web dressing media, feeding a web dressing media, collecting at least a portion of the web dressing media, and applying a portion of the web dressing media.

Claim Rejection under 35 U.S.C. § 103:

The Office has rejected claims 44-50, 55, and 57 under U.S.C. 103(a), as being unpatentable over Nagahara in view of Donohue, and claims 44-50, 53, 55, and 57 under 35 U.S.C. 103(a) over Liu in view of Donahue.

As discussed in more detail above, the flat bar element taught in Donahue has geometric features on its surface and is used directly as a conditioning head to condition the pad. However, aside from referring to a flat bar conditioning head having geometric features on its surface, there is no suggestion or motivation in any of the cited prior art references to use a flat bar to apply a web dressing media onto a polishing pad. It is respectfully submitted that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. MPEP §2143.01.

Furthermore, it is submitted that even if Nagahara were to be modified to include the alleged flat bar of Donahue, as suggested by the Office, the claimed invention would not have been achieved. First, even if the pin connection 311 of Nagahara were to be replaced by a flat bar, the pin connection 311 is still disposed within the front bridging component 311 of Nagahara which has a cylindrical shape. As a result, the flat width of the flat pin connection 311 could not have defined the portion of the application surface to be applied to the pad. Furthermore, the pin connection 311 is used to connect the front bridging component to the arm, and as such, does not provide the same function as the pressure application plate of the claimed invention.

If the pin connection 311 and the front bridging component were to be replaced by the single flat bar of Donahue, due to the angular configuration of the arms in Donahue, the tension applied by the flat bar having the flat width may not be equivalent on both sides of the alleged flat bar. As a result, one of ordinary skill in the art, recognizing the negative results of having excess tension on one side of the web as opposed to the other, would not have changed the shape of the pin connection 311 and the front bridging component 312 from the roller type shape.

Likewise, it is submitted that even if Liu were to be modified so as to include the alleged flat plate of Donahue, the claimed invention would not have been achieved. Liu does not teach or suggest using a web that is between a first point and a second point which are different. Merely replacing a single roller with the alleged flat bar of Donahue still does not result in a web style conditioning assembly, as defined in the claimed invention.

Furthermore, Liu teaches a belt-operated conditioner including a plurality of rollers, which axles are parallel to each other and are defined such that the rollers touch the belt. In Liu, the belt rotates and as a result of the rotation of the belt, the belt is applied to the polishing pad. In short, the rollers do not apply any pressure on the belt so as to condition the belt. Thus, even if each of the rollers were to be replaced with a flat bar, it is the belt's movement that causes the diamond dust covering the outside of the belt to condition the polishing pad, and not the application of the pressure application plate to the polishing pad.

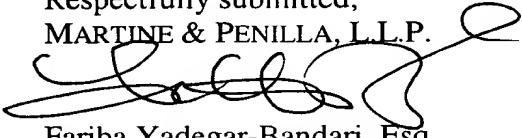
Thus, independent claims 44, 48, 51, 56, and 58 are respectfully submitted to be patentable over the cited prior art. In a like manner, dependent claims 45-47, 49, 50, 52-55, 57, and 59, each of which directly or indirectly depends from the respective independent claim 44, 48, 51, 56, and 58 are submitted to be patentable over the cited prior art for at least the reasons set forth above regarding the applicable independent claim.

Applicants submit that this response to Final Office Action complies with 37 C.F.R. § 1.116(b) and should be entered. The amendments and remarks do not raise any new issues.

In view of the foregoing, Applicants respectfully submit that all of the pending claims 25, 26, 42-59 are in condition for allowance. Accordingly, a Notice of Allowance is

respectfully requested. If the Examiner has any questions concerning the present Amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6900, ext. 6913. If any additional fees are due in connection with filing this Amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. LAM2P206). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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